State Senator
Neal J. Kedzie
11th Senate District

Senate Committee on Natural Resources and Environment
Testimony of State Senator Neal Kedzie
Senate Bill 156 – Geo-Thermal Well Drilling
March 9, 2012

Thank you Mr. Chairman and members of the Committee for allowing me to speak in favor of Senate Bill 156, relating to licensure, registration, and educational standards for geo-thermal well drilling.

Last summer, Representative Al Ott brought this issue to my attention, and I would like to thank him and his staff for working with the DNR and various stakeholders over the last few months on revisions to the original legislation.

In fact, a comprehensive substitute amendment to the Assembly companion bill was recently introduced and recommended for passage by the Assembly Natural Resources Committee earlier this week on a unanimous vote. An identical amendment has also been introduced to this bill.

During the 2005-06 legislative session, I authored Senate Bill 467, which was eventually signed into law as Wisconsin Act 360. Among several provisions, the Act revised the licensure of well drillers and pump installers by creating a registry and licensing system for well drillers and pump installers, and requiring certain educational standards for well drilling.

Senate Bill 156 before you today builds on 2005 Wisconsin Act 360 by adding geo-thermal well drillers – or more specifically, heat exchange system drillers – to the registration and licensure system of well drillers, as well as the educational requirements for well drillers.

Although a relatively new technology, geothermal heat exchange systems are being implemented on a more frequent basis in Wisconsin, thus we believe there is a need to ensure such well drilling is done properly and by qualified individuals.

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Both Representative Ott and I agree that ensuring this practice is performed in a responsible and professional manner which adheres to our state's high water quality standards is sound public policy and necessary in order to both protect the well drilling industry and Wisconsin's vital groundwater.

I know there are others here today to testify on the bill, including staff with the Department of Natural Resources and experts in the field of well drilling. If committee members have any technical questions regarding this type of activity and how it is performed, I am certain any of those individuals would be able to speak to those questions.

Again, thank you for your time and your consideration of Senate Bill 156.

Al Ott
State Representative • 3rd Assembly District

Senate Bill 156
Geothermal Well Drilling
Senate Committee on Natural Resources & Environment
March 9, 2012

Thank you for the opportunity to testify on Senate Bill 156 (SB 156), relating to the construction of geothermal heat exchange drill holes.

Under current law (Chapter 280), the Department of Natural Resources (DNR) regulates the drilling of water wells for the purpose of obtaining ground water for human consumption. The Department does not, however, have specific authority to regulate drill holes used for geothermal heat exchange.

As amended, SB 156 extends Chapter 280 licensing and continuing education requirements to the construction of vertical drill holes used as part of geothermal heat exchange systems. Because the purpose of the bill is groundwater protection, the bill relates only to the drill hole construction component of such systems.

The proper construction of both water well drill holes and geothermal drill holes requires knowledge of not only drilling and grouting, but also Wisconsin's geology, codes and regulations. SB 156 requires individuals who construct geothermal heat exchange drill holes to demonstrate such knowledge through industry-tailored licensure and continuing education.

SB 156 is a common-sense approach to minimizing groundwater contamination risks by ensuring that well-qualified and skilled professionals are properly constructing the drill holes utilized in vertical geothermal heat exchange systems.

Senate Substitute Amendment 1 incorporates necessary technical corrections to the bill, and reflects an agreement reached by stakeholders regarding the means by which an individual could become qualified to construct drill holes for the purpose of geothermal heat exchange. Further, the substitute amendment ensures minimal state fiscal impact and minimal cost of compliance for those in the industry.

Drilling holes into the ground creates a conduit for contamination to access the groundwater below. Our existing water well regulations are designed to not only provide quality drinking water, but to minimize the risk of groundwater contamination. SB 156 is an important extension of current law, and speaks to groundwater protection by requiring a standard of knowledge and training among those seeking to construct drill holes as part of a vertical geothermal heating and cooling system.

The companion bill to SB 156 – AB 201 – received a unanimous vote to recommend passage, as amended, from the Assembly Committee on Natural Resources earlier this week.

Thank you for your time, and for your consideration of SB 156.

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Testimony of the Department of Natural Resources
Relating to Senate Bill 156
Senate Committee on Natural Resources and Environment
March 9, 2012

By Jill D. Jonas
Director, Bureau of Drinking Water and Groundwater

The Department appreciates the opportunity to work with Representative Ott and Senator Kedzie and your staffs along with the Wisconsin Water Well Association, several geothermal contractors, the Wisconsin Geothermal Association, Gateway Technical College and others.

Senate Bill 156 (SB156) creates greater oversight of the expanding geothermal heating/cooling industry as it relates to drilling heat exchange drillholes.

The bill creates the category "Licensed Driller". It further authorizes the Department to specify the authority of that license for individuals engaging in well drilling or in heat exchange drilling.

SB 156 retains the existing registration, exam, training and experience requirements for an individual wanting to construct water supply wells.

The bill authorizes the Department to write rules that create registration, exam, training, and experience requirements for heat exchange drilling.

During the discussions with Representative Ott, the Drinking Water and Groundwater Program agreed that a technical advisory committee created for this rule would include the representatives of the Wisconsin Water Well Association, geothermal drillers, Gateway Technical College and other interested groups.

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Senate Bill 156
Geothermal Well Drilling
Senate Committee on Natural Resources and Environment
March 9, 2012

Thank you for the opportunity to testify on Senate Bill 156 relating to the construction of geothermal heat exchange drill holes.

Under current law (Chapter 280), the Department of Natural Resources (DNR) regulates the drilling of water wells for the purpose of obtaining ground water for human consumption. While the Department also has the authority to regulate the drilling of other types of holes in the ground, regardless of whether they are used as water wells, they do not have specific authority to regulate drill holes used for geothermal heat exchange.

As amended by the Substitute Amendment, SB 156 extends the Chapter 280 licensing and continuing education requirements to the construction of vertical drill holes used as part of a geothermal heat exchange system.

Geothermal heating-cooling is a rapidly growing renewable energy technology. It uses the ground and groundwater to provide heat exchange and it generally comes in one of two varieties - horizontal and vertical. SB 156 addresses only vertical systems and only to the construction of the drill hole used for these systems, not the systems in their entirety.

In a vertical geothermal heat exchange system, a drill hole is made into the ground, often extending 300 or more feet below the surface. In residential systems, three or more drill holes may be necessary, while in commercial systems, there could be several hundred drill holes necessary to create enough heat exchange to heat or cool a building.

An improperly constructed well is a direct conduit for contamination to enter the groundwater. To minimize the risk of groundwater contamination, both water wells and geothermal drill holes must be constructed in accordance with code and by individuals skilled to perform this work. That is the purpose and intent of SB 156 - to create a code and a process for making certain that people who construct these holes know what they are doing and remain knowledgeable through a continuing education process.

SB 156 is identical to AB 201 which was worked on by all of the stakeholders in the industry and the DNR. The Substitute Amendment reflects the agreements made by the stakeholders at a meeting held after the Assembly hearing in January. AB 201, as amended, was recommended for passage earlier this week by the Assembly Natural Resources Committee on a unanimous vote.

We believe that SB 156/AB 201 reflect a common-sense approach to minimize risk to our groundwater by ensuring that well-qualified and skilled professionals are properly constructing the drill holes utilized in vertical geothermal heat exchange systems.
In the end, the groundwater doesn't care whether a drill hole is being used as a water well, as part of a geothermal heating-cooling system, or for any number of other uses. SB 156 does more speaks to the broader concern of groundwater protection by requiring a standard of knowledge and training among those seeking to construct drill holes as part of a vertical geothermal heating-cooling system.

Thank you for your time, and for your consideration of SB 156 and we encourage you to recommend the bill for passage.

March 9, 2012

Wisconsin Geothermal Association

Saving from the ground up

To: Senate Committee on Natural Resources and Environmen

From: Bruce Walker, Wisconsin Geothermal Association

Re: Senate Bill 156

On behalf of the Wisconsin Geothermal Association, I am writing is support of Senate Bill 156 (as amended) regarding geothermal drill holes.

The mission of the Wisconsin Geothermal Association is to responsibly advance the geothermal heating and cooling industry in Wisconsin. It is a professional consortium of contractors, manufacturers, design engineers, utilities, educators and others dedicated to the promotion and growth of Wisconsin's geothermal heating and cooling industry.

The use of geothermal systems in Wisconsin is on the rise. Geothermal systems take advantage of the earth's constant year-round ground temperature to provide heating, cooling and hot water in a variety of applications and have proven to deliver excellent occupant comfort in Wisconsin, while saving energy and reducing emissions.

The Wisconsin Geothermal Association believes that the best way for our industry to advance is to advance responsibly. In order to save energy, we are using our ground and water resources in a new way and believe those resources should be protected as our industry advances. SB 156 accomplishes just that.

My company drills both water wells and geothermal heat exchange drill holes and I can tell you that the goal of a properly constructed drill hole is not just to extract something from the ground - whether water or heating/cooling. It is also to protect the groundwater. An improperly constructed well is a direct conduit for contamination to enter the groundwater. To minimize the risk of groundwater contamination, both water wells and geothermal wells should be built in accordance with codes and standards and by individuals skilled to perform this work.

From the surface, a drill hole may look the same in Madison as it does in Eau Claire or Green Bay. They are not. The ground below us dictates how we can drill and how we will seal these drill holes once they are complete. It takes skill and experience to know which technique will work best in which situation and, if the circumstances change in the field, what to do next.

Imagine a residential property. Now imagine sticking a 300 foot straw in the ground. That, basically, is a drill hole. If that drill hole is used to extract water from below and the water is used for people to drink, our straw would be labeled a water well. Unless the property owner

performed the work themselves (and even then they must comply with the relevant codes), the water well would have been constructed by someone licensed in this state to do that work. Both initial training and continuing education are required of those who are licensed.

Now imagine that our residential property owner decides to invest in a geothermal heating-cooling system. Depending upon the size of the property, an additional three, four, or five "straws" or drill holes are placed in the ground, often times within a few feet of our water well. Under current law, the person making the three, four, or five drill holes need not have any type of education or training with regard to geology, drilling of wells, or the sealing of wells.

Simply put, the groundwater doesn't distinguish between one drill hole or "straw" and the next. It's a conduit to the groundwater. It's intended use doesn't matter. What matters, however, is the construction of the drill hole. Contamination - everything from road salt to animal waste to lawn fertilizer - is usually filtered through hundreds of feet of dirt, sand, and rock before returning to the groundwater below.

A drill hole, by comparison, allows any contamination a means to drop the 300 or 400 feet into the groundwater, unfiltered, in a matter of seconds rather than years. If the drill hole is not properly constructed and properly sealed, water will carry the contaminate through the path of least resistance - any breach in the drill hole - and deliver the contaminate to the water below.

Around the Institute for Discovery here in Madison, there are dozens and dozens of geothermal drill holes. At Epic Systems in Verona, there are hundreds. To see these locations now, you'd never know it. Geothermal heating-cooling systems are not like some of the other renewable systems that you see around the state. For one, geothermal systems are not designed to increase the amount of power to the electrical grid but to reduce the amount of demand placed on the grid.

Another way geothermal systems differ from other renewables is that geothermal is buried below the ground and is located inside of the building. The systems are buried below the ground and are located inside of the building. There are no wind farms or solar panels to be seen. But out-of-sight should not mean out-of-mind. Because they are under the ground, we need to have greater confidence in the construction of these drill holes that comes not just with a plan approval, but with the knowledge that the work is being done by qualified individuals.

Admittedly, licensure is not a perfect solution. It is no more a guarantee that the groundwater will not be contaminated as a drivers license guarantees that there won't be an accident. This proposal ensures that well-qualified and skilled professionals are properly constructing the drill holes utilized in vertical geothermal heat exchange systems.

Wisconsin is not alone in addressing this issue. Although the processes may differ slightly, our neighbors in Iowa, Minnesota, Michigan, and Illinois all regulate the construction of geothermal drill holes through a licensing or credentialing process of some kind. We think it's time that Wisconsin do the same....

Improperly drilled, the effect on the groundwater could be significant and could be permanent. A single groundwater contamination from an improperly constructed system would be a set-back to this emerging technology and, we would note, one of the few bright spots in the construction industry.

We appreciate that our organization has been part of the process in developing this legislation and that the Substitute Amendment reflects agreements of the entire industry and the DNR. SN 156 protects the groundwater and, most importantly, it does it in a way that will not restrain the growth of the geothermal industry. It is measured and it is reasonable.

We appreciate your consideration and support of SB 156.

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Senate Committee on Natural Resources and Environment
Senate Bill 156
March 9, 2012

My name is Jeff Beiriger and I am testifying today on behalf of the Wisconsin Water Well Association.

Two sessions ago, I worked on a piece of legislation dealing with the plumbing industry. In that instance, we were talking about "gray water" systems - a system where water is treated on-site and reused before it is sent to a sewage system for treatment.

In that instance, we had to change the plumbing licensing law because it defined plumbing as "potable" water - or water that is used for human consumption. Clearly, the original licensing legislation did not anticipate a day when we would reuse water.

Absent the change in the definition of plumbing, this emerging technology would have created a potential breach in safety standards that had existed in our state for many years. Without the change, the potential was there for an agency to be regulating an industry with questionable authority. And so the industry approached the legislature to seek a change in the law - not, as some might have argued, to "fence" anyone out, but to make certain that existing safety standards were extended to cover the new realities of a changing industry.

These emerging technologies are causing us to revisit licensing legislation, not to decide whether there should be a license, but to determine whether these new technologies are being recognized and reflected in our existing law.

And so it is with SB 156.

When water well licensing was passed seventy-five years ago, it was passed with the purpose of protecting citizens from unsafe drinking water and poor quality installations and to protect the groundwater. Geothermal heat exchange wasn't on the radar back then, and so we are left to reexamine the existing law.

Because SB 156 is meant to address a groundwater protection gap in our law, it doesn't over-reach. It doesn't address all drill holes, only those used for vertical heat exchange systems. And it doesn't affect any other part of the geothermal system, only the drill hole itself.

Consider again that there may be three or four drill holes for a residential geothermal system, all adjacent to another property in a residential area. What happens on one property affects the adjacent wells, for they almost certainly share a common aquifer. That's part of the reason why SB 156 is necessary. There needs to be a higher standard of qualifications, if not for the property owner who selects the contractor they will work with, then for the adjacent property owners who don't get to decide whether their neighbor will hire a qualified contactor or not.

SB 156 makes sense - for the existing water well industry and for the emerging geothermal industry - most of which partners with water well contractors for their vertical drilling needs (94 percent of the time according to the DNR).

40 percent of the energy used in buildings is for heat load and that there are significant cost savings to be had through geothermal systems. These systems are taking hold and will take off when the construction market rebounds. When it does, SB 156 allows the water well industry to continue to provide clean water and it allows the geothermal industry a means to avoid a set-back in the technology resulting from substandard construction and a resulting groundwater contamination.

Much like the plumbing legislation I discussed earlier - which passed by voice votes in both chambers - this change is prompted by a world that is changing around us. We need to thoughtfully consider the effects of these new technologies and adapt our laws to allow their use while continuing to serve the larger purpose. SB 156 is supportive of the existing industry, the emerging industry, and the policy of groundwater protection.

We ask you to support SB 156.